International Remittances and Size Distribution of Income in the Philippines

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I. Introduction

The purpose of this paper is to look into the relationship between international remittances and the size distribution of income in the Philippines. This paper contributes to the literature by showing that in the Philippines, international remittances result in the worsening of income inequality, and that such impact becomes stronger when we consider the correlation between domestic income and remittances.

No consensus has been reached about the effect of remittances on income equality. In Table 1, we summarize the findings of previous studies on the decomposition of the Gini coefficient of total income according to its sources. Stark, Taylor and Yitzhaki's (1986) pioneering work concluded that international remittances have an *equalizing* effect on income distribution in a Mexican rural village which has been sending its people abroad for a long time, but had the reverse effect in a village with higher internal than international migration rate. Their findings are generally confirmed in their subsequent study (Stark, Taylor and Yitzhaki, 1988) using the same data set but placing varied weights on the welfare of the poorer income recipients in the social welfare function. Succeeding studies by Rodriguez (1998), Barham and Boucher (1998), Taylor (1992) and Adams (1991, 1996), which also use the decomposition methodology using data from different countries, concluded that international remittances have an *unequalizing* effect on income distribution.

As direct impact of international remittances on income inequality, it will raise its recipients' income, improve the receiving household's rank in the income distribution compared to non-recipients, and this may result in the worsening or improvement of income equality, depending on their pre-migration position in the

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Table 1. Results of Previous Studies on International Remittances and Income Inequality

	Rural Mexico[a]	Rural Egypt	Rural Mexico[b]	Rural Pakistan	Philippines[c]	Nicaragua[d]
Survey year	1982	1986-87	1982, 1988	1986-89	1991	1991
Number of Households	61	1000	61	727	24,872	152
% of Households with migrants	25.8,70.0	10.4	43[e]	20.2	16.6[e]	57
Gini coefficient	0.40, 0.46	0.27	0.48, 0.52	0.381	0.314, 0.480	0.38, 0.47
Absolute change of Gini coefficient.	0.00057,-0.00048	0.035		0.002	0.006, 0.023	0.05, -0.048
% change in Gini coefficient	0.14, -0.10	14.79	0.03, 0.01	0.47	1.27, 7.90	13.16, -8.51
Authors	Stark, Taylor and Yitzaki(1986, 1988)	Adams(1991)	Taylor(1992)	Adams(1996)	Rodriguez(1998)	Barham and Boucher(1998)

Notes: a : The values are shown separately for two sample sets.
b : The values are shown for survey years, 1982 and 1988, respectively.
c : The values are shown with respect to Gini and Theil indices of inequality, respectively.
d : The values are shown with respect to actual and estimated incomes, respectively.
e : as % of total income

Sources: Author's compilation from Adams (1991, 1996), Barham and Boucher (1998), Rodriguez (1998), Stark, Taylor and Yitzhaki (1986, 1988) and Taylor (1992).

income distribution. The indirect impact, on the other hand, depends on how remittances will influence other sources of income.[1] For example, international remittances can raise domestic income if, as a result of higher income due to remittances, the recipient household becomes less risk-averse and is less financially-constrained to undertake investments to raise income from other sources (Lucas and Stark, 1985). It can have adverse effect on domestic income if, because of higher income, the recipient household reduces its labor force participation and spends more time for leisure or to take over the role left by the migrant in the household, like looking after the children. These behaviors and the selectivity of migrants in favor of a specific income bracket or skills will definitely affect not only household income and its rank at present, but also, on a wider perspective, national economic development due to remittances' indirect impacts on domestic income.

The Philippines is an interesting case because of the prevalent high levels of both income inequality and international emigration. It is the second largest exporter of labor in the world. At the same time, we can find in Table 2 that the Gini coefficient has been increasing in the 1990s, with the lowest 25% of the

households receiving lesser and the highest 25% receiving greater share in total income.

Table 2. Income Distribution in the Philippines

Year	Gini Coefficient	Lowest 25%	Second 25%	Third 25%	Highest 25%
1957	46.140	0.065	0.143	0.279	0.515
1961	49.710	0.042	0.121	0.242	0.435
1965	51.320	0.035	0.160	0.240	0.440
1971	49.390	0.036	0.117	0.250	0.460
1985	46.080	0.052	0.143	0.276	0.479
1988	45.730	0.052	0.143	0.276	0.475
1991	48.000	0.075	0.124	0.214	0.582
1997	48.412	0.063	0.121	0.216	0.600

Sources: Deininger and Squire Data Set, World Bank (1999) for years 1957-1988
Estimated from Rodriguez (1998) Table 4 for year 1991
Author's Calculations from Family Income and Expenditure Survey (FIES), 1997.

To achieve our purpose, we first decompose total income and see the contribution of each income source to inequality of total income. Then we predict how any increase in remittances will affect equality and social welfare. Finally, we examine how international remittances affect other incomes in the short-run and draw conclusions as to the full effect of remittances on the inequality of total income.

This paper is organized as follows: The next section gives a descriptive analysis of the trends in income and its size distribution in the Philippines. We compare the income of households with and without income from abroad. Section III will discuss the analytical framework of the study (Stark, Taylor and Yitzhaki (1986, 1988) and Taylor (1992)). Section IV will be devoted to the interpretation of results. Finally, we shall summarize our findings and discuss its policy implications in section V.

II. A Descriptive Analysis of Income and Its Size Distribution in the Philippines

Using data from the Family Income and Expenditures Survey (FIES, 1997),[2] we first compare the amount and share of the different sources of income to total income for households with and without migrants using Table 3. First, the

average annual income of Philippine households is 123,761 pesos (US$ 4,161) in 1997. Of this amount, only 6.8% was income from abroad. Second, we also observe that 17.26% of all households receive cash income from abroad. Third, there are wide differences in the average income and expenditures of households with income from abroad and those without it. The latter group receives on the average only about 64.1% of the average total income of the former. Fourth, while both types of households rely mostly on wages, income from abroad also makes up for a considerable portion of the income of those that receive it, at 27.7% of the average total income. Fifth, we can further divide the households receiving income from abroad according to the type of income they receive from abroad. We can see from the last 4 columns of Table 3 that households with contract workers are the households which rely most on income from abroad (as 36.8% of total income), basically because the contract workers are usually the main breadwinners in the family even if they have stayed and worked in the Philippines. These observations imply the significant role of income from abroad

Table 3. Sources of Income of Households With and Without Income from Abroad (1997)

Type of Income from Abroad	ALL Respondents	Households With No Income from Abroad	Households With Income from Abroad	Source of Income of Household with Income from Abroad			
				Contract Workers	Permanent Migrants	Gift Recipients	Retirees/ Investors
Number of Households	39,520	32,699	6,821	2,976	2,001	2,229	326
% in Total Number of Households	100.00	82.74	17.26	7.53	5.06	5.64	0.82
Average Household Expenditures (in pesos)	99,076	90,740	139,036	137,621	152,248	136,244	141,891
(in US$)	(3,331)	(3,051)	(4,675)	(4,627)	(5,119)	(4,581)	(4,771)
Average Household Income (in pesos)	123,761	112,890	175,878	176,995	192,006	168,354	189,136
(in US$)	(4,161)	(3,796)	(5,914)	(5,951)	(6,456)	(5,661)	(6,360)
Income Sources							
Wages (%)	46.5	51.0	32.6	28.7	32.5	35.6	34.0
Entrepreneurial Income (%)	26.2	29.1	17.3	15.0	17.1	20.4	13.5
Other Income(%)	20.6	20.0	22.3	19.6	23.3	25.0	25.2
Income from Abroad (%)	6.8	0.0	27.7	36.8	27.1	19.0	27.3
TOTAL (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Type of Income from Abroad							
From Contract Workers (%)	54.3	na	54.3	93.2	8.8	15.8	9.5
From Other Migrants (%)	26.8	na	26.8	4.3	85.6	8.6	12.0
Cash Gifts (%)	15.6	na	15.6	2.0	4.4	72.8	13.0
Pensions and Dividends (%)	3.3	na	3.3	0.5	1.2	2.8	65.4
TOTAL (%)	100.0	na	100.0	100.0	100.0	100.0	100.0

Notes: The exchange rate used is 29.74 pesos per dollar.
Source: Author's Calculations from Family Income and Expenditure Survey (FIES), 1997.

not only from the point of view of those receiving it because it will increase their total income, but also because it will be a "source" of upward mobility in the income distribution.

Using the same data, we can also draw some observations on the size distribution of household income in the country in 1997. We rank total household income and divide the sample into deciles. Table 4 shows the percentage share of households in each income decile to total income as well as the share of each source of income to average total income per decile. From Table 4, we can draw the following points: (1) The bottom decile received an average annual income of 21,750 pesos (US$725), which is only 5% of what the top decile received in the same year. In terms of percentage share in total national household income, the bottom decile's share was about 1.76%, while the top decile received 37.10%. (2) For household income distribution based on source, in general, the household's percentage share of wages and salaries in total income increases as its rank in the income distribution improves, except for the top decile. On the other hand, poorer households seem to rely more on income from entrepreneurial activities, which includes activities in the underground economy like small-scale retailing or cottage industries, and other sources of income, which are on a transitory or temporary basis. (3) Income from abroad seems to be positively correlated with the household's rank in income distribution. While the share of income from abroad of those in the bottom decile is less than 1% of its total household income,

Table 4. Income Distribution According to Source of Income (1997)

Decile	Average Income (in pesos)	% Share in Income of All Households	% Share of Each Source in Per Decile Average Income			
			Wages and Salaries	Entrepreneurial Activities	Other Sources	Income from Abroad
Bottom	21,750	1.76	23.46	42.79	32.84	0.90
Second	34,890	2.82	28.83	42.77	26.86	1.53
Third	45,090	3.64	32.77	41.57	23.91	1.74
Fourth	56,220	4.54	36.69	38.32	22.42	2.57
Fifth	69,960	5.65	42.62	33.12	20.55	3.72
Sixth	87,600	7.08	47.54	28.05	19.30	5.11
Seventh	111,840	9.04	50.56	24.15	18.94	6.35
Eighth	146,700	11.85	52.99	20.23	18.40	8.38
Ninth	204,420	16.52	54.19	18.93	18.32	8.56
Top	459,120	37.10	45.30	25.34	21.26	8.10
All Deciles (Ave.)	123,761	100.00	46.47	26.18	20.56	6.80

Source: Author's Calculations from Family Income and Expenditure Survey (FIES), 1997.

the average income from abroad of the eighth, ninth and top deciles is more than 8% of the average income. Even in absolute terms, income from abroad is very high for the top decile compared to the bottom decile group, with the former receiving 42 times as much income from abroad than the latter.

In this section, we have been looking at income and its composition and distribution in relation to the sources of income treated independently. An equally relevant question from the point of view of national social welfare, however, is how remittances from abroad affect the size distribution of income. Do remittances from abroad contribute more to income inequality in the Philippines than domestic sources of income? Will the increase in the number of emigrants and the amount of remittances promote income equality in the country? These are the main issues which we will attempt to analyze in the following sections.

Ⅲ. Analytical Framework

1. The Model[3]

Let us consider an economy in which the social welfare index, W, is presented here as equation (1).

$$W=w(\overline{y_0}, G_0) \tag{1}$$

We will adopt a social welfare index function introduced by Stark and Yitzhaki (1982) as specified in equation (2).

$$W=\overline{y_0}(1-G_0),\quad w'(\overline{y_0})>0 \text{ and } \quad w'(G_0)<0 \tag{2}$$

Here, the social welfare index is a function of the average total income of all member households, $\overline{y_0}$, and the index of income inequality, G_0. As $\overline{y_0}$ increases or G_0 decreases[4], the total social welfare improves.

Total income, y_0, is the sum of income from i sources, $(i=1,2,\cdots,k)$ as shown in equation (3).

$$y_0 = \sum_{i=1}^{k} y_i \tag{3}$$

Following Taylor (1992), let us suppose that the k'th income is a function of international remittances (the *jth* income) so that equation (4) holds.

$$y_{k'} = \alpha + \beta_1 y_j \tag{4}$$

where $y_{k'}$ is the k'th source of income, and α and β_1 are the parameters of the equation. Equation (3) can now be rewritten as equation (5).

$$y_0 = \sum_{i \neq k'} y_i + \alpha + \beta_1 y_j \tag{5}$$

On the other hand, we will use the Gini coefficient as the index of inequality and define the Gini coefficient of total income, G_0, in equation (6)

$$G_0 = \frac{[2\sum Cov(y_i, F(y_0))]}{\bar{y}_0} \tag{6}$$

$$G_0 = \sum_{i \neq k'} R_i S_i G_i + R_j S_{kj} G_j = \sum_{\substack{i \neq k' \\ i \neq j}} R_i S_i G_i + (S_J) R_j G_j$$

where y_0 and y_i are the series of total income and the *ith* source income, respectively; $F(y_0)$ is the series of cumulative share in total income when they are ranked in ascending order. We also define

$$S_{kj} = \frac{\beta_1 \bar{y}_j}{\bar{y}_0} \text{ and } S_J = S_j + S_{kj} = \frac{(1+\beta_1)\bar{y}_j}{\bar{y}_0}$$

as the indirect share of remittances in total income channeled through remittances' effect on the *k'th* income; and the full share of remittances in total income, respectively.

In equation (6), the Gini coefficient of total income is expressed in terms of R_i, the Gini correlation; S_i, the share to total income; and G_i, the Gini coefficient of income, from the *ith* source (including *kth* and *jth* sources).[5] The first term

on the righthand side of equation (6) (second line) gives us the impact of each source of income other than remittances, while the second term reflects both the direct and indirect contribution of remittances on income distribution.

International remittances will affect inequality so that if households with high income receive more remittances from abroad, i.e., if R_i is positive, then, the contribution of remittances to the total Gini coefficient is high. The same observation holds true if remittances from abroad make up for a large share in the total income of households (S_J is large), or if the distribution of international remittances is highly unequal (G_j is high).

2. The Effect of an Increase in Remittances on Income Inequality and Social Welfare

The next task is then to see how a small increase in international remittances affects income equality. Suppose there is an *increase* in international remittance income (y_i), by e so that the new international remittance income and total Gini are expressed in equation (7).

(7)
$$y_j(e)=(1+e)y_j$$

$$G(e)=\sum_{\substack{i\neq k'\\ i\neq j}} R_i S_i G_i+(S_J(e))R_j G_j$$

The marginal change in the Gini coefficient of total income resulting from an increase in remittances, or $G(e)-G_0$, is shown in equation (8).

(8)
$$\frac{\partial G_0}{\partial e}=(S_j+S_{kj})(R_j G_j-G_0)=S_J(R_j G_j-G_0)$$

The first term on the right-hand side of equation (8) represents the full share of international remittance and can take a positive or negative value depending on the relationship between remittances and income from the $k'th$ source, and as before, on the difference between $R_j G_j$ and G_0.

Dividing equation (8) by G_0 will give us equation (9).

$$(9) \qquad \frac{\partial G_0/\partial e}{G_0}=\frac{(S_j+S_{kj})(G_jR_j)}{G_0}-(S_j+S_{kj})=\frac{S_J G_j R_j}{G_0}-S_J$$

By multiplying it by 100, we obtain the percentage change in the Gini coefficient resulting from a change in remittances by one dollar. It represents the marginal effect of an increase in international remittance income which is equal to the difference between its relative contribution (effect) to inequality and its relative contribution (effect) to total income.

Finally, we also derive for the marginal effect of remittances on social welfare, as shown in equation (10).

$$(10) \qquad \frac{\partial W}{\partial e}=(1+\beta_1)\bar{y}_j(1-R_jG_j)$$

Equation (10) states that the marginal effect of a small change in international remittances on social welfare depends on (1) the share of international remittances to total income, $\bar{y}_j$, which can be interpreted as the effect of remittances on the mean of total income; and (2) the effect of remittances on the distribution of total income, $y_jR_jG_j$. Moreover, if international remittances are positively related to the *k'th* source of income ($\beta_1>0$), then the full effect of remittances on the social welfare is larger.

Dividing equation (10) by W, we obtain equation (11) which when multiplied by 100, can be interpreted as the percentage change in social welfare resulting from a uniform increase in income from the *jth* source (which, in our case, is international remittance income) by one dollar.

$$(11) \qquad \frac{\partial W/\partial e}{W}=(S_j+S_{kj})\left[\frac{1-R_jG_j}{1-G_0}\right]=S_J\left[\frac{1-R_jG_j}{1-G_0}\right]$$

(1) If $R_jG_j=G_0$, then the change in Gini coefficient is zero, and welfare will increase by the amount of international remittances' share to total income, S_J, and its magnitude depends on the relationship between remittances and domestic income.

(2) If the correlation between total income and remittances, R_j, is negative, then

any increase in international remittance income will definitely raise the social welfare.

(3) If the correlation between total income and remittances, R_j, is positive, then there will still be an increase in social welfare since $R_j G_j \leq 1$. In this case, however, the effect to the mean of total income is weakened by the distributional effect, leading to a lower net welfare change.

Since we want to know the full effect of remittances on the Gini coefficient of total income, we conduct a regression of the natural logarithm of total income, as a function of (1) the natural logarithm of international remittances, and (2) χ, a vector representing human capital and household characteristics, for households with migrants[6]. We assume that there are only two sources of income, international remittances (y_1), and income from domestic sources (y_2) so that $y_0 = y_1 + y_2$. On the other hand, the vector χ will include attributes of the household head such as age, age-squared representing experience, and dummies for college education, having a job or not and marital status; and attributes of the household such as the number of adults, family size and a dummy for urbanity. The regression function can therefore be expressed as equation (12).

$$\log y_0 = \alpha + \beta_1^* \log y_1 + \beta_2 x + \varepsilon \tag{12}$$

where β_1^* is the elasticity of total income with respect to international remittances, β_2 is the vector of coefficients of the attributes, and ε is the error term. From equation (12), we can compute for the total effect of international remittances as

$$(1+\beta_1) = \beta_1^* \times \frac{\overline{y_0}}{y_1} \tag{13}$$

To test if international remittances indeed influence income from other sources, we will conduct a t-test with the null hypothesis,

$$H_0 : \beta_1^* \times \frac{\overline{y_0}}{y_1} = 1 \qquad H_1 : \beta_1^* \times \frac{\overline{y_0}}{y_1} \neq 1$$

If this hypothesis is rejected, we can say that international remittances and other sources of income are correlated, and therefore, we can evaluate the direction of the effect as follows: If $(1+\beta_1)$ as defined in equation (13) is less than 1, then international remittances lower income from other sources, probably because leisure for the household is a normal good or because other household members are forced to quit their job and assume the role of the migrant in household production. In this case, the full effect of international remittances on income equality is less than its direct effect. On the other hand, if $(1+\beta_1)>1$, we can say that international remittances raise income from the *k'th* source (y_2), likely because remittances from abroad loosen the liquidity and risk constraints facing the household. Using the remittances sent by the migrant member as capital, the household can now embark on mainly small and medium scale business ventures that will raise domestic income. In this case, migrant households will further increase their income compared to non-migrant households, and income inequality is potentially worse compared to the case when we only consider the direct effect.

Ⅳ. Analysis of Results

We divide this section into two parts, (1) when income sources are treated independently, i.e. $\beta_1=0$, and thus we only determine the direct effect of each source to the total Gini coefficient; and (2) when other income sources are related to income from abroad, implying the full effect of remittances from abroad on income.

1. The Direct Effect of Remittances on Income Inequality and Social Welfare

The estimated Gini coefficient of the Philippines in 1997 for total income is 0.4841 (third column, last row of Table 5), which is comparable to the estimation by Rodriguez (1998, p. 342) of 0.4800 using FIES data for 1991. This suggests that from 1991 to 1997, income distribution in the Philippines has not improved or worsened considerably even if there was a considerable increase in remittances from abroad during this period. The Gini coefficient for income from domestic sources (0.4423)[7] can be considered as a simple index that measures inequality in the absence of income from abroad. Comparing this with the Gini coefficient of

total income, we can say that international remittances aggravate inequality in the Philippines.

Table 5. Decomposition of the Gini Coefficient based on Income Source (1997)

Income Source	Share in Total HH Income (S)	Gini Coefficient for Income Source (G)	Gini Correlation with Total Income Rankings (R)	Contribution to Gini Coefficient of Total Income (SGR)	Share in Gini of Total Income (SGR/G_0)
Wages and Salaries	0.4647	0.6670	0.7468	0.2315	0.4782
Income from Entrepreneurial Activities	0.2618	0.7359	0.5800	0.1117	0.2308
Other Incomes	0.1848	0.6314	0.8277	0.0966	0.1995
Domestic Remittances	0.0207	0.8934	0.1427	0.0026	0.0055
International Remittances	0.0680	0.9353	0.6579	0.0418	0.0864
Total Income	1.0000	0.4841	1.0000	0.4841	1.0000

Source: Author's Calculations from Family Income and Expenditure Survey (FIES), 1997.

We then decompose the Gini of total income according to its sources or components (equation 6), assuming that $\beta_1=0$, and the results are also shown in Table 5. We include remittances from domestic sources, although it has a very small share in total income, to contrast its effect with that of remittances from abroad. Also, since we are mainly concerned with the impact of human migration, we will focus on cash remittances from contract workers and permanent migrants and term them international remittances. We will include cash gifts, pensions and dividends from abroad in the "other income" category.

The first column shows the share of each source of income to total income. Income from wages and salaries comprise almost half of total income (46.47%), followed by income from entrepreneurial activities and then other incomes (26.18%). With regards to income from international remittance's share to total income (6.8%), it is relatively small, although this may not reflect the total amount of remittances from abroad because it excludes material gifts brought to the country by the migrants or overseas contract workers themselves.

The second column shows the Gini coefficients for each source of income. International remittances are the least equally distributed income component, as shown by its very high Gini coefficient of 0.9353, followed by remittances from domestic sources. That the Gini coefficients of all income components are very high and are all highly unequally distributed imply that income for households is highly concentrated to one source. The very high value for the source Gini of

international remittances means that migrants and remittances are gravely not equally distributed among households with varied total incomes. This also suggests that international, and even internal migration, are still inaccessible for many Filipinos. In the Philippines, international migration and therefore remittances are selective of the richer households, who are also more educated, who have more adult members and who live in urban areas where information on international labor market is more available (See Appendix A).

The third column shows the Gini correlation, R_j, between total income and income from each source. There is a positive relationship between each income component and total income, as shown by the positive values of the Gini correlation, R. The correlation between international remittance income and total income is not as high as those between total income and wages and salaries or other incomes, but not as considerably low as domestic remittances.

Now we are ready to look at the contribution of each income source to the Gini coefficient of the Philippines in 1997. In general, remittances, both domestic and international, have the lowest contributions to the 1997 total Gini coefficient of total income. Although the distribution of international remittance income is highly unequal, it is offset by this component's minimal share in total income, thus, its contribution to the Gini of total income is considerably low. On the other hand, wages and salaries contributed most to total inequality, basically because of its high share in total income (46%) and high Gini correlation (0.75). For all income components, the percentage share in Gini of total income is almost equal to its share in total household income, suggesting a positive and almost unitary correlation between the two. We can therefore predict that the potential impact of international remittances on equality will be stronger as migration and the share of remittances to total income increase in the future.

Next, we evaluate the effect of a one dollar increase in any of the income components to inequality, and the results are shown in Table 6. The second column shows the absolute marginal change in total Gini resulting from a slight increase in income from each source, using equation (8). Based on the results, we can divide the sources of income into two categories: those that raise the total Gini, such as wages and salaries, remittances from abroad and other sources of

income, as manifested by the positive values in column 2; and those which lower it, such as income from entrepreneurial activities and domestic remittances; as shown by the negative values in column 2. That additional domestic remittance lowers the Gini coefficient of total income implies that facilitating internal migration, which results in higher domestic remittances, may potentially lower income inequality compared to international migration.

Table 6. Marginal Change in Inequality and Social Welfare Due to Change in Income per Source (1997)

Income Source	Gini Coefficient	Marginal Change in Total Gini Coefficient (equation 8)	% Change in Gini Coefficient (equation 9) x 100	% Change in Social Welfare Index (equation 11) x 100
Wages and Salaries	0.6670	0.0064	1.3218	45.2255
Income from Entrepreneurial Activities	0.7359	-0.0150	-3.0990	29.0882
Other Incomes	0.6314	0.0071	1.4705	17.1006
Domestic Remittances	0.8934	-0.0074	-1.5284	3.5092
International Remittances	0.9353	0.0089	1.8426	5.0694

Source: Author's Calculations from Family Income and Expenditure Survey (FIES), 1997.

The third column of Table 6 computes for the marginal change as a percentage of total Gini, derived by multiplying equation (9) with 100. Additional income from entrepreneurial activities has the highest potential negative contribution to income inequality (hence a positive contribution to equality) in the Philippines (-3.0990%), followed by income from domestic sources (-1.5284%). On the other hand, international remittances and wages and salaries worsen income inequality (1.8426% and 1.3218% respectively). This confirms previous findings that international remittances lead to a more uneven distribution of income in the Philippines (Rodriguez, 1998). It also implies that a government that adopts an active policy in sending laborers abroad to raise national income but at the same time wants to achieve income equality must design supplementary policies that will compensate for the higher inequality brought about by migration and remittances. In the same manner, the high absolute and percentage change in the contribution of income from entrepreneurial activities to total Gini suggests that policies that will promote proprietorship and self-employment will be effective in achieving economic equality in the country. The results also imply that international migration and remittances should not remain as a long-term policy

of the government of a sending country that prioritizes income equality as an economic and social goal.

Finally, the last column of Table 6 shows the effect of a one unit increase in the *jth* income source to social welfare, computed using equation (11) and then multiplied with 100. All values are positive, meaning any increase in income, regardless of its source, will improve social welfare. The change in the social welfare index is lowest for international remittances, and highest for wages and salaries. We can attribute the very low contribution of additional remittances to the social welfare on the following factors: (1) the low share of remittances to total income. However, as the number of migrants and their remittances increase, we can expect this share to increase, resulting in a much larger increase in social welfare. (2) the strong (negative) distributional impact of remittances, due to its very high inequality index of 0.9353 (see Table 5). Therefore, as migration intensifies due to higher wage differentials, economic integration or active government policies, the contribution of remittances to social welfare will rely on the net effect of these two factors.

2. The Full Effect of Remittances on Income Inequality and Social Welfare

First, we perform a regression of the natural logarithm of total income using equation (12). From the results shown in Table 7, we can draw the following observations: First, we can see that all variables are statistically significant at more than 95%, and except for the dummy for age-squared, the variables positively affected household's total income in 1997. Second, we detect positive relationships between total income, on one hand, and the actual number of adults and the dummy for migrant on the other. However, the coefficient for the former is less than that of the latter, implying that migrants contribute more to the household's total income compared to the adult members who stay in the Philippines. Third, the coefficient of international remittances, representing the elasticity of total income due to international remittances, is positive and statistically significant, therefore, we can say that for migrant households, international remittances raise total income.

Based on the result of the two-tailed t-test for the coefficient of international

Table 7. Regression of Total Income as Function of International Remittances and Household Attributes (1997)

Dependent Variable: Log of Total Income (in pesos)

Variable	Coefficient	t-statistic
International Remittances	0.210	44.91
Attributes of the HH Head		
Age (years)	0.013	4.15
Age-squared	0.000	-3.47
Education of Head (college=1)	0.280	31.53
Job (has job=1)	0.114	7.01
Marital Status (married=1)	0.042	1.22
Attributes of Household		
No. of Adult Members	0.091	14.86
Size of Family	0.035	7.65
Urbanity (urban=1)	0.339	21.96
Constant term	7.952	90.28
R-squared	0.474	
Adjusted R-squared	0.473	
F-statistic	681.927	
Prob (F-statistic)	0.000	
Number of Observations	6821	

Note: All variables are statistically significant at 99% confidence level except Marital Status.
Computed using equation (12)
Source: Author's Calculations from Family Income and Expenditure Survey (FIES), 1997.

remittances (446.41), we reject the null hypothesis. Using equation (13), we compute for the direct and indirect effect of remittances, which is 3.0847. This means that the full effect on income inequality and social welfare is 3.0847 as much as the direct effect due to the positive correlation between remittances and other sources of income. Ceteris paribus, this means that a one-unit increase in international remittances will raise total household income by 3.0847 units. Using this value, we can compute for the full (direct and indirect) share of international remittances to total income of all households (20.97%) as shown in the first column of Table 8. This considerably high contribution to total income suggests that remittance recipients efficiently use international remittances to generate income from other, especially domestic, sources. and that because of international remittances, the household is relieved of its liquidity and risk constraints, especially in undertaking small- and medium scale venture businesses in the sending country. In this sense, international remittances can largely contribute to economic expansion in the sending country.

At the same time, however, the positive correlation between international remittances and other sources of income will also result in higher inequality, as shown by the now three times higher Gini coefficient for international remittances, and the potential percentage change in Gini coefficient and social welfare due to a one percent increase in remittances (see Table 8). For households with migrants, international remittances will sufficiently facilitate upward movement in the income distribution, leaving those without migrants behind, and eventually, international remittances will further worsen the distribution of income.

Table 8. The Effect of International Remittances on Income Inequality (1997)

Effects	Share in Total Household Income (S)	Contribution to Gini Coefficient of Total Income (SGR)	Percentage (%) Change in Gini Coefficient	Percentage (%) Change in Social Welfare Index
Direct	0.0680	0.0418	1.8400	5.0700
Full Effect	0.2097	0.1291	5.6600	15.9300

Notes: The value used for $(1+\beta_1)$ is 3.0847.
Source: Author's Calculations from Family Income and Expenditure Survey (FIES), 1997.

V. Summary

In this study, we have looked into the impact of international remittances on income distribution in the Philippines, a country which has been experiencing high rates of international migration and income inequality. We use data from the Family Income and Expenditure Survey of the Philippines (FIES), 1997 to examine the full effect of international remittances to inequality and social welfare in which we include its impact on other sources of income as well.

By decomposing the Gini coefficient of the household's total income based on its sources, we have seen that each source's contribution depends on its share to total income, its distribution among households and its correlation with total income. International remittances have the least contribution to inequality while wages and salaries have the highest, mainly because the former's share in total income is much smaller than the latter, although the former is more unequally

distributed among the households than the latter.

Our findings confirm the results of previous studies that international remittances lead to a more uneven distribution of income in the Philippines. A marginal increase in international remittances will worsen income inequality because any increase in income due to international remittances accrues to richer households. In the Philippines, international migration and therefore remittances are selective of the richer households, who are also more educated, who have more adult members and who live in urban areas where information on international labor market is more available. In the light of heightening international labor mobility, we can predict that the potential negative impact of remittances on inequality will be more evident as the current trend in the selectivity of migrants continues.

A very significant finding from this study is the positive correlation between remittances and domestic income which has the following important implications. It suggests that remittance recipients efficiently use international remittances to generate income from other, especially domestic, sources and that because of international remittances, the household is relieved of its liquidity and risk constraints in undertaking small- and medium scale ventures in the sending country. In this sense, international remittances can largely contribute to economic expansion in the sending country. At the same time, however, such positive correlation between international remittances and domestic income aggravates the unfavorable impact of international remittances on inequality.

Appendix A. Attributes of Households With and Without Income from Abroad (1997)

Attributes	ALL Respondents	Households with no Income from Abroad	Households with Income from Abroad	Sources of Income from Abroad			
				Contract Workers	Permanent Migrants	Cash Gifts from Abroad	Pensions and Dividends
Age of Household Head	46.97	46.41	49.66	48.96	51.21	49.12	57.52
Household Head is male (%)	84.80	87.80	70.40	61.80	72.10	78.30	69.90
Household Size (%)	5.13	5.14	5.05	5.11	5.04	5.08	4.83
Households Living in Urban Area (%)	59.30	56.60	72.00	68.60	75.70	74.00	76.40
Household Head has a Job (%)	85.60	89.20	68.60	54.20	67.60	73.70	50.60
Household Head has Elementary Educ.(%)	48.00	50.90	33.90	35.30	31.90	32.50	36.20
Household Head has High School Educ.(%)	30.10	29.40	33.20	33.60	31.80	34.10	33.10
Household Head has College Educ. (%)	22.00	19.70	33.00	31.00	36.30	33.50	30.70

Source: Author's Calculations from Family Income and Expenditure Survey (FIES), 1997.

Nevertheless, the full increase in social welfare is higher than when we consider the direct effect only. Our findings also imply that a government which adopts an active policy of sending laborers abroad but at the same time wants to achieve income equality must design supplementary policies that will compensate for the higher inequality brought about by migration and remittances.

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Notes

[1] In this study, we basically deal with the short-run. The intertemporal impact of international migration to household income is a subject for future empirical research subject to the availability of survey data from two or more years.

[2] The data used in this study is the Family Income and Expenditure Survey (FIES) for the year 1997, which consists of information from 39,520 households representing all households in the Philippines. The survey gathers data on the different attributes of the household and the household head, the household's annual expenditures and income from different sources such as (1) wages and salaries, (2) income from entrepreneurial activities, (3) other incomes and (4) income from abroad. Wages and salaries include compensations received in cash and kind from regular employment, and seasonal/occasional employment in agricultural and non-agricultural sectors. Incomes from entrepreneurial activities include earnings by family members who are self-employed or operators of agricultural and non-agricultural activities. Income from abroad are further divided into (1) cash received from contract workers, (2) cash received from permanent migrants (3) cash gifts from abroad, and (4) pensions and dividends from abroad. Throughout this paper, we will use the household as the unit of analysis.

[3] Adapted from Stark, Taylor and Yitzhaki (1988, 1986), and Taylor (1992).

[4] Keeping average income constant, a transfer of income from the rich to the poor, or an improvement in G, will raise social welfare.

[5] According to Lerman and Yitzhaki (1985), the Gini correlation displays a combination of the properties of the Spearman's rank and Pearson correlation coefficients. R_i assumes a value between 1 and -1. It is equal to zero if the source income and total income are not correlated at all, and approaches 1 (-1) if the ith source of income is an increasing (decreasing) function of total income. Also, if y_i, y_0 are normally distributed, the Gini correlation is equal to Pearson's correlation coefficient.

[6] By regressing total income only of households with migrant members, we assume that the income of households without migrants is not affected directly and indirectly by international remittances.

[7] This value is obtained by adding the Gini coefficients of wages and salaries, income from entrepreneurial activities, other incomes, and domestic remittances.

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